MEDICAL RISKS

Trends in Mortality by Age and Time Elapsed

VOLUME 1

A Reference Volume Sponsored by
The Association of
Life Insurance Medical Directors of America
and The Society of Actuaries

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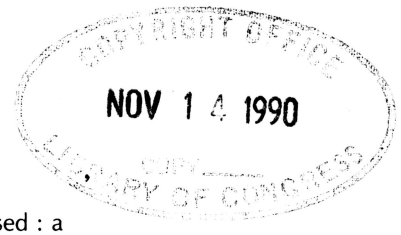

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LIFESTYLE HAZARDS
CHAPTER 3

3.1 Lifestyle And Social Class

Edward A. Lew, A.M., F.S.A.

"Every life is a work of art and every spirit has its own distinguishing style, good or more often, alas, indifferent or downright bad."

— Aldous Huxley (1894-1963)
Texts and Pretexts

The term "lifestyle" has been used to describe the common practices, habits, and traditions of social groups. Such groups have been characterized as social classes, as socioeconomic segments of a population, or more narrowly as ethnic, religious, or other communities.

The differences in life expectancy and overall mortality between social classes in Europe before the Industrial Revolution have been traced by Antonovsky in his 1967 paper entitled "Social Class, Life Expectancy and Overall Mortality."[1] He concluded that " . . . when mortality rates are extremely high or extremely low, class differences will tend to be small. In other words, when men are quite helpless before the threat of death, or when men have made great achievements in dealing with this threat, life chances will tend to be equitably distributed. On the other hand, when moderate progress is being made in dealing with this threat, differential consequences are to be expected."

The mortality statistics currently available for the United States and Britain indicate that social class differences in mortality remain sizeable on a relative scale despite truly great achievements in medicine, public health, and increasing understanding of health hazards.[2] Major difficulties in maintaining reasonable health standards still persist for large segments of the population.

A better understanding of the impact of social class on mortality grew out of the analyses of mortality rates by occupation, which since 1861 have been prepared every ten years by the Registrar General for England and Wales. These analyses were apparently suggested as early as 1859 by William Farr, who also recognized the advantages of examining mortality in broader groupings encompassing professional persons, the commercial class, the industrial class, the domestic class, and persons engaged in agricultural pursuits. It was not until 1910-12 that the Registrar General finally grouped various occupations into five social classes. In 1930-32 the analyses were extended to cover the mortality of married women classified according to their husbands' occupations so that comparisons could be made of the mortality risks of men and women sharing the same home environment. This made it possible to separate the hazards of the work place from the intrinsic hazards of the mode of living associated with an occupation, which presumably also reflected income levels, educational attainment, and lifestyles.

The effects of salutary lifestyles within the setting of an adequate income and a good educational attainment have long been recognized as an important factor in lower death rates from the chronic diseases that now dominate death rates at the middle and older ages. Studies of several well-defined populations with salutary health habits have demonstrated that distinctly lower death rates from heart disease and cancer are associated with avoidance of tobacco and alcohol, as well as with disciplined behaviour and availability of social supports.

The first large-scale American investigation of mortality by occupational groupings which used the patterns set by the Registrar General for England and Wales was the Whitney Study, based on the 1930 death rates in ten states.[3] It showed the following mortality rates for men in relation to the death rates for all gainfully employed males:

WHITNEY STUDY

Occupational Grouping	Mortality Ratios			
	Ages 15-24	Ages 25-44	Ages 45-64	Ages 15-64
Professional Men	74%	64%	90%	74%
Proprietors, Managers, and Officials	97	76	88	87
Clerks and Kindred Workers	72	74	92	86
Skilled Workers and Foremen	94	89	96	91
Semi-Skilled Workers	100	111	116	111
Unskilled Workers	147	174	138	159

A more extensive analysis of the 1950 death rates by occupational groupings was made for the entire U.S.[4] Kitagawa and Hauser produced similar estimates for 1960,[5] as shown below compared with the 1950 mortality ratios.

Occupational Grouping	Mortality Ratios	
	1950	1960
Professional, Technical, and Kindred Workers	79%	80%
Managers and Officials	83	91
Clerical, Sales, and Skilled Workers	94	99
Semi-skilled Workers	101	107
Laborers (Except Farm Laborers)	167	119

Kitagawa and Hauser were the first to develop mortality differentials by education and income for a nationwide sample of the U.S. population.[5] For white males and white females aged 25-64, these figures by educational attainment were as follows:

Educational Attainment All Persons		1960 Mortality Ratios	
		White Males	White Females
0-4 Years		115%	160%
5-7		114	118
8		107	108
High School	1-3 Years	103	91
	4	91	87
College	1-3 Years	85	82
	4 or More	70	78

Kitawaga and Hauser concluded that the mortality differentials by educational attainment were likely to be more significant than by occupation or income because occupation and income varied over the lifetime of an individual.

More recent testing of the mortality differentials by education and income indicates that persons with less than a college degree face higher death rates, but that below a college degree there is not a continuous relationship between less education and higher death rates.[6] In one study no positive effect of income was found after controlling for educational attainment.

The 1970-72 Report of the Registrar General for England and Wales[7] continued to show significant differentials in mortality by social class among men aged 25-64 as follows (see also Table 302A):

I	Professional Occupations	77%
II	Intermediate Occupations	81
III-N	Non-Manual Skilled Occupations	99
III-M	Manual Skilled Occupations	106
IV	Partly Skilled Occupations	114
V	Unskilled	137

The mortality differentials by social class continued in England at similar levels during 1973-75.[8]

An analysis of mortality among British civil servants by level of employment showed that death rates from coronary disease rose sharply from administrative personnel to the lowest employment grades.[9] The authors indicated that more smoking at the lowest employment grades and higher blood pressures were the most significant factors associated with greater mortality. A more recent study of the same British civil servants by cause of death not only confirmed the earlier finding of distinctly more smoking at the lowest employment grades, but also showed generally higher mortality from causes not associated with smoking. The authors concluded that " . . . the similarity of the risk gradient from a range of diseases could indicate the operation of factors affecting general susceptibility."[10]

The influence of educational attainment and social class was also clearly evident in a long-term mortality study of U.S. veterans according to rank in service: privates, noncommissioned officers, and officers at time of separation from service in 1946, traced for 23 years to December 31, 1969.[11] The mortality ratios in relation to contemporaneous death rates of white men in the general population were as follows:

Educational Attainment at Separation	Privates	Noncommissioned Officers	Commissioned Officers
Grammar School	101%	86%	89%
High School	77	66	55
College	81	65	49
Total	100	77	57

Mortality from malignant neoplasms varied from 97% among privates to 70% among commissioned officers, with lung cancer mortality ranging from 124% among privates to 82% in commissioned officers. Heart disease was 98% in privates but only 50% in commissioned officers. Even accidental death mortality ranged from 117% among privates to 81% in noncommissioned officers and commissioned officers.

The authors concluded that relative mortality of commissioned officers, noncommissioned officers, and privates held not only for all causes but also for most of the specific causes examined, and there was only a small tendency for the differences to diminish with the passage of time during the 23-year follow-up period. This conclusion is remarkably similar to that reached in the mortality study of British civil servants by employment grade over a 19-year period.

A study of the mortality differentials from coronary heart disease among officers and soldiers in the British Army 1972-77[12] showed the following results:

	Mortality Ratios	
	All Causes	Coronary Heart Disease
Direct Entry Officers	33%	55%
Officers promoted from ranks	100	n.a.
Senior noncommissioned officers	123	n.a.
Junior noncommissioned officers and privates	205	150

n.a.—not available.

The authors attributed the mortality differentials to social class and more smoking at the lower ranks.

Lifestyles in Religious and Other Commonalities

Lifestyles which put emphasis on salutary health habits to which the great majority adhere are found in certain religious denominations. The Mormons, Seventh Day Adventists, and the clergy in the major Protestant denominations offer useful examples of such populations.

The Church of Jesus Christ of Latter-Day Saints, commonly called the Mormon Church, has for many years proscribed the use of alcohol, tobacco, coffee, and tea. The church has encouraged strong families and high educational attainment and has maintained high standards of discipline among its members both in church and personal activities. A large proportion of Mormons are of Northern European descent, and many of them in Utah still live in rural areas.

Enstrom, Lyon, Gardner, West, and others have studied the death rates among Mormons in California and Utah over a period of years.[13,14,15,16]

Enstrom estimated the 1970-72 death rates from all causes among California Mormons of both sexes combined to be about 68% of the contemporaneous death rates of Californians. The cancer death rates of the male Mormons were about two-thirds of those in the male California population, while the cancer death rates of female Mormons were about four-fifths of those in the female California population.

Lyon, Gardner, and others estimated the 1969-71 death rates of Utah Mormons from acute ischemic heart disease and found the male Mormons to have experienced death rates from this cause of only about 80% of Utah non-Mormons; the corresponding figure for female Mormons was about 65%. The relative death rates from chronic ischemic heart disease were distinctly lower among male Mormons but higher among female Mormons.

Gardner and Lyon studied the cancer death rates of Utah Mormons. The death rates from cancers of smoking-associated sites among the highest levels of Mormon priesthood were very low in relation to those for all male Mormons. Likewise the Mormon women classified as having the strongest adherence to church doctrines recorded low death rates from cancers of smoking-associated sites.

Over the period 1967-75 the incidence of cancer among male Utah Mormons was about three-fourths of the expected for the Utah population, and was only about 35% of the expected for lung cancer. The authors concluded that while smoking-associated sites of cancers are largely responsible for the difference in cancer incidence between Mormons and non-Mormons in Utah, some other factors related to lifestyle were also involved.

The Seventh Day Adventists comprise a small conservative denomination with about 600,000 members in North America. By church proscription, they abstain from smoking and alcoholic beverages. They also tend to avoid coffee, tea, and other beverages containing caffeine. A large proportion follow a vegetarian diet and avoid rich, highly refined foods. It has been estimated that some 60 percent of the Seventh Day Adventist population are adult converts and in this sense represent a self-selected group. Furthermore, the

proportion of college educated persons among Seventh Day Adventists has been estimated at about twice that in the general population.

Phillips, Kuzma, Lotz, and others have studied the death rates among Seventh Day Adventists in California, using records assembled by the American Cancer Society for the Cancer Prevention Study (1960-72).[17,18,19] In this study the male Seventh Day Adventists experienced death rates from all causes of about 66% of the contemporaneous death rates among non-Adventists, while female Seventh Day Adventists recorded death rates of about 88% of those for corresponding female non-Adventists. Lung cancer death rates were extremely low, as was the mortality from colorectal cancer. Seventh Day Adventist males registered mortality rates of only about four-fifths of those for non-Adventist nonsmoker males; the corresponding mortality ratio for Seventh Day Adventist women was about 90%. Thus it appears that, as in the case of the Mormons, factors other than abstention from tobacco and alcohol played a significant role in the lower death rates among Seventh Day Adventists; their lacto-vegetarian diet may have been one such factor. The relatively small differences in mortality from all causes between Seventh Day Adventist women and non-Adventist women may reflect marriages between Seventh Day Adventist men and women who were not brought up in the church.

Studies of the mortality among white clergymen of the principal Protestant denominations bring out that these clergymen experienced relative mortality only fractionally higher than that recorded among Mormons and Seventh Day Adventists.

A study by King of white Baptist clergymen[20] indicates that during the 1950s they had been subject to mortality rates of approximately 70% of those of white males in the general population in 1955. These mortality rates were about half of the 1950 death rates for all males with work experience. These clergymen may be regarded as a selected group because a fourth of them came from families where the father had been in a professional, official, or managerial occupation, and the proportion of college graduates among them was about the same as among clergymen in other Protestant denominations. Their mortality by cause was about 75% for diseases of the cardiovascular system, coronary heart disease, and cancer but only about 30% from lung cancer; their death rate from accidents was only about half that among white males in the general population, due mainly to very low accidental death mortality from non-motor vehicle accidents.

Earlier studies by King and others had shown that the Protestant Episcopal, United Presbyterian, and Lutheran ministers had experienced death rates very close to those among the white Baptist clergymen.[20,21,22,23] A notable feature of the mortality among these clergymen was the very low death rate from lung cancer.

In rare instances it has been possible to study populations (undifferentiated by religious denomination) for which some detailed information was available on health and social practices. One such investigation conducted by the Human Population Laboratory (California State Department of Health) dealt with a stratified sample of Alameda County housing units and focussed both on personal health practices and social behaviour.[24,25] Seven health practices were considered: never smoking cigarettes, regular physical activity, moderate use of or abstention from alcohol, 7-8 hours sleep a day, maintaining proper weight, eating breakfast, and not eating between meals. The social behaviour considered was marital status, church membership, activity within social groups, and maintenance of contact with friends.

Following 0-3 of the health practices was regarded as "poor" health habits, and following 6-7 of the health practices was regarded as "good" health habits. The men following "good" health habits experienced 67% of average mortality, while the women following "good" health habits recorded 76% of average mortality. On the other hand both the men and women who had "poor" health habits experienced double average mortality. An analysis of the specific factors considered showed that men smoking two or more packs of cigarettes recorded 60% higher mortality, while men taking five or more alcoholic drinks a day registered 30% higher mortality. Very little physical activity was associated with about 50% higher mortality. Women smokers recorded 25% extra mortality, while those reporting very little physical activity registered 85% extra mortality.

The study also attempted to evaluate the effects of social isolation by means of a social network index that weighted the number of social ties and their relative importance in terms of more intimate contacts. Thus the unmarried in this study experienced about 75% higher mortality in males and 40% higher in females. Those without church affiliation showed a relative mortality about 40% higher than that of church members in both sexes. Those not belonging to social groups experienced 25% higher mortality than those who were members of social groups in males and about 40% higher in females. Subjects with few contacts with

relatives experienced nearly 50% higher mortality than those with many contacts in males and 80% in females. The authors concluded that the association between social ties and mortality was independent of self-reported health status and health practices such as smoking, drinking, and physical activity.

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Subjects Studied:

(1) Men aged 25-59 in the U.S. as reported in the 1950 census by occupational groupings, broadly representative of social class.

(2) Men aged 25 and older in the U.S. as reported in the 1960 census by occupation, education, and income (the so-called 1960 Matched Records Study); also men aged 25 and older residing in Chicago, classified by socioeconomic groups and by years of school completed.

(3) Male employees of two large corporations classified by age and salary class.

(4) Inhabitants of 21 metropolitan areas of Canada classified by sex, age, income level, and cause of death.

Follow-up:

(1) Based on 1950 deaths in U.S., as recorded by occupation.

(2) Based on about 340,000 deaths in the U.S. over the period May through August 1960, as recorded by occupation, educational attainment, and income; subsidiary study based on 1960 deaths in Chicago by census tracts.

(3) Based on deaths over the period 1965-71, as recorded among insured lives.

(4) Based on 1971 deaths in 21 metropolitan areas in Canada.

Limitations of Studies:

(1) Recording of occupation and industry on 1950 death certificates was sometimes incomplete or missing; deaths for which no occupation or industry was given were distributed on the basis of occupations and industries reported, which had the effect of overstating mortality rates for well defined occupations and understating rates for occupations poorly reported.

(2) The socioeconomic characteristics reported on some 340,000 deaths between May and August 1960 were matched against corresponding entries in the 1960 census schedules, and as a result, closer agreement was brought about in the designations of such characteristics in this study; however, in some cases the designations represented compromises in judgment. In the Chicago Study the designations of socioeconomic classes were based on the income characteristics of census tracts (place of residence).

(3) The two large corporations whose mortality was studied by salary class were not representative of a wider range of businesses or industries.

(4) The classifications were based on the median household income of the census tract in which the subject usually lived, rather than on the basis of the subject's own income level.

Mortality Results and Conclusions:

(1) Mortality during 1950 among males aged 25-59 was studied for all causes of death combined and for the major cause of death classifications, separately for five broad occupational groupings by and large representative of social class, as follows:

(I) Professional Workers
(II) Technical, Administrative, and Managerial Workers
(III) Clerical, Sales, and Skilled Workers
(IV) Semi-Skilled Workers
(V) Laborers

The mortality ratios from all causes, relative to death rates among all males aged 25-59, increased from 79% for professional workers and 83% for technical, administrative, and managerial workers, to 101% for semi-skilled workers, and 167% for laborers. The corresponding figures for cancer were 90%, 91%, 103%, and 136%, while for cardiovascular diseases they were 95%, 95%, 96%, and 142%, respectively. Accidental death mortality ranged from 51% among professional workers and 68% among technical, administrative, and managerial workers to 108% among the semi-skilled workers and 196% among laborers.

(2) Estimates of mortality from all causes during 1960 by broad occupational groupings produced similar patterns, as follows:

Professional, Technical, and Kindred Workers	80%
Managers and Officials	91
Clerical, Sales, and Skilled Workers	99
Semi-Skilled Workers	107
Laborers (except Farm and Mine)	119

The differentials in mortality from cardiovascular diseases were even wider.

The 1960 Matched Records Study was the first to develop mortality differentials by education and income (as well as by occupation) for a nationwide sample of the U.S. population. The authors reached the conclusion that the differentials by educational attainment were likely to be more significant than those by occupation or income, because occupation and income can and often do vary over the lifetime of an individual.

Among white males aged 25-64, the mortality ratios ranged from a high of 115% for men with less than 5 years of schooling to a low of 70% for men with at least 4 years of college. The corresponding mortality ratios for white women were 160% and 78%, respectively. The large differential in mortality by educational attainment in white women reflects the rather high mortality among white women with less than 5 years of schooling. Mortality differentials by educational attainment were much smaller at ages 65 and older.

Among non-white men aged 25-64, mortality ratios decreased from 114% for men with less than 5 years of schooling to 87% for men with a high school or college education. The corresponding figures for non-white women were 126% and 74%, respectively.

The mortality differentials by educational attainment were somewhat larger for white men in the North and West than for white men in the South; the corresponding differentials for white women were somewhat smaller than for men.

More recent estimates of the mortality differentials by educational attainment, first recorded in the 1960 Matched Records Study, confirm the patterns shown in the 1960 Study.

The 1960 Matched Records Study also showed that for white men aged 25-64 with family incomes of less than $4,000 per year the mortality ratio was 132%, compared with 88% for white men aged 25-64 with annual family incomes of $8,000 or greater. The corresponding figures for white women were 115% and 88%.

When the mortality ratios by educational attainment were standardized for age and income the mortality of white men with less than 8 years schooling was 113%, while that of white men with one or more years college was 81%. The corresponding figures for women were 127% and 84%, respectively.

The authors also analyzed mortality rates in Chicago and the Chicago Standard Metropolitan Statistical Area by socioeconomic groups, defined in terms of the level of the median family incomes of census tracts. In 1960 Chicago white males aged under 65 showed mortality ratios varying from 183% in the lowest socioeconomic group to 100% in the highest socioeconomic group. The mortality ratio in the suburban ring outside Chicago (but inside the Chicago Standard Metropolitan Statistical Area) was 85% for all socioeconomic groups combined. The corresponding figure for Chicago was 123%. The mortality ratio for white women in Chicago by socioeconomic group varied from 188% to 100%, with 92% for all socioeconomic groups combined in the suburban ring outside Chicago.

The variations among non-whites at ages under 65 were of a similar order. For non-white males the range was from 136% to 71%, with 72% in the suburban ring outside Chicago. For non-white women the corresponding ratios were 137%, 81%, and 75%, respectively.

(3) An analysis of the 1965-71 mortality among male corporate employees of two large companies by salary class, published in the Metropolitan Life Insurance Company's Statistical Bulletin, showed the following relative mortality by age and salary class:

RELATIVE MORTALITY* AMONG MALE EMPLOYEES OF TWO LARGE COMPANIES 1965-1971

Age Group	Salary Class		
	High	Middle	Low
15-34	68%	75%	108%
35-39	58	66	84
40-44	64	65	94
45-49	61	61	79
50-54	66	78	86
55-59	79	75	84
60-64	76	82	94
15-64	68	73	89

* Expected death rates calculated on U.S. white population death rates.

Source: Reference 1. – Met. Life Stat. Bull. Jan. 1975.

(4) An analysis of the mortality by income level in urban Canada (21 metropolitan areas in Canada) showed the following mortality differentials by income levels in 1971:

Income Level	Mortality Relative To That For All Income Levels	
	Males	Females
1 (high)	84%	92%
2	91	93
3	99	100
4	104	107
5 (low)	125	112
Total	100	100

There was little correlation between mortality and educational attainment at the high income levels, but mortality at the lower income levels was very much lower among the better educated men and women.

At ages 35-64, the mortality from all causes at the lowest income levels was double that at the highest income levels among men and about 50% higher among women. Mortality from diseases of the circulatory system at the lowest income levels was 60% higher among men, and 75% higher among women than at the highest income levels. The corresponding figures for mortality from cancer were 60% higher among men, but only about 15% higher among women. On the other hand, mortality from accidental and other violent causes was 150% higher among men with lowest incomes than among men with the highest incomes, and about 70% higher among women with lowest incomes.

SOCIAL CLASS — U.S. AND CANADA

TABLE 301A

ANALYSIS OF MORTALITY BY SOCIAL CLASS U.S. 1950 MALES AGED 25-59

Cause of Death	Deaths Observed d	Mortality Ratio* 100(d/d')
PROFESSIONAL WORKERS		
All Causes	7,180	79%
Cancer	1,113	90
Cardiovascular	3,775	95
Accidents	570	51
TECHNICAL ADMINISTRATIVE AND MANAGERIAL WORKERS		
All Causes	20,390	83%
Cancer	3,146	91
Cardiovascular	10,684	95
Accidents	1,839	68
CLERICAL, SALES, AND SKILLED WORKERS		
All Causes	82,873	94%
Cancer	12,629	103
Cardiovascular	42,062	102
Accidents	8,271	81
SEMI-SKILLED WORKERS		
All Causes	51,391	101%
Cancer	7,110	103
Cardiovascular	21,297	96
Accidents	6,857	108
LABORERS (EXCEPT FARM)		
All Causes	37,597	167%
Cancer	4,326	136
Cardiovascular	15,023	142
Accidents	5,032	196

* Standardized mortality ratio with expected deaths calculated on U.S. 1950 death rates. See section on Measures of Comparative Mortality in Chapter 2 (Interpretation of Results).

Source: Reference 1.

SOCIAL CLASS — U.S. AND CANADA

TABLE 301B

ANALYSIS OF MORTALITY BY EDUCATIONAL ATTAINMENT IN U.S. MATCHED RECORDS STUDY MAY-AUGUST 1960

Educational Attainment	MORTALITY RATIOS*			
	White Males		White Females	
	Ages 25-64	Ages 65 and Older	Ages 25-64	Ages 65 and Older
ALL PERSONS				
0-4 Years	115%	102%	160%	117%
5-7	114	100	118	104
8	107	100	108	103
High School 1-3 Years	103	} 99	91	} 94
4	91		87	
College 1-3 Years	85	} 98	82	} 70
4 or More	70		78	
All Persons	100	100	100	100
FAMILY MEMBERS				
0-7 Years	113%	102%	126%	110%
8	106	98	106	101
High School 1-3 Years	104	} 99	93	} 91
4	92		88	
College 1 Year or More	81	98	85	70
All Family Members	100	100	100	100

* Expected deaths calculated on age-specific death rates among all subjects in study.

Source: Reproduced with permission of authors, publisher, and Population Research Center, University of Chicago (Reference 2).

SOCIAL CLASS — U.S. AND CANADA

TABLE 301C

ANALYSIS OF MORTALITY BY SOCIOECONOMIC DIFFERENTIALS — CHICAGO 1960

Socioeconomic Group	MORTALITY RATIOS*			
	Males		Females	
	Under 65	65 and Older	Under 65	65 and Older
WHITES				
Chicago (1) (low)	183%	168%	188%	145%
(2)	128	121	136	118
(3)	111	111	116	108
(4)	96	106	96	109
(5) (high)	100	111	100	110
Total Chicago	123	119	124	116
Outside City†	85	97	92	102
U.S.	100	100	100	100
NON-WHITES				
Chicago (1) (low)	136%	140%	137%	115%
(2)	106	119	107	113
(3)	71	96	81	107
Total Chicago	104	114	107	105
Outside City†	72	94	75	76
U.S.	100	100	100	100

* Relative mortality to corresponding U.S. death rates. See section on Measures of Comparative Mortality in Chapter 2 (Interpretation of Results).

† In Chicago Standard Metropolitan Statistical Area.

Source: Reproduced with permission of authors, publisher, and Population Research Center, University of Chicago (Reference 2).

References and Acknowledgments:

E. M. Kitagawa and P. M. Hauser, "Differential Mortality in the United States," Chapter 3, in Occupational Differentials (Boston: Harvard University Press, 1973).

Subjects Studied: Deaths between May and August 1960 among all U.S. males aged 25-74 were related to the 1960 census returns by occupation. About 96% of the white males aged 25-64 and 82% of those 65-74 had worked at some time since 1950 and could therefore be classified by occupation; mortality rates for those aged 75 and older were not determined because less than half the subjects in this age range had worked since 1950. The discrepancies in the occupations reported on death certificates and those in the census (occupation reported during last week of March 1960) were resolved in a special study, known as the 1960 Matched Records Study, which investigated the comparability of occupations reported on death certificates and census returns.

Limitations of Study: Mortality rates were based on deaths over the limited period from May through August 1960 and were determined for broad occupational subdivisions only.

Mortality Results and Conclusions: Mortality among white men with no work experience since 1950 was appreciably higher than for those with work experience. At ages 25-64, the mortality of those with no work experience was about double, while at ages 64-74 it was about 60% higher. The higher mortality of men without work experience suggests that incapacity to work or illness was the primary reason for their increased death rates.

At ages 25-64, the lowest mortality among white men was recorded among agricultural workers (76%); followed by professional, technical, and kindred workers (80%); and managers, officials, and proprietors (91%). The highest mortality was experienced by service workers (137%) and by laborers (119%). The mortality of craftsmen, foremen, and kindred workers was lower than that of clerical and sales workers.

At ages 65-74, the lowest mortality among white men was experienced by agricultural workers, and managers and officials. The range of mortality differentials was much greater at ages 25-64 than at ages 65-74.

The occupations with lowest mortality were highly correlated with greater educational attainment and higher earnings. The differentials in mortality by occupation are believed to reflect in large part socioeconomic differences rather than particular occupational hazards.

DIFFERENTIALS BY OCCUPATION — U.S. 1960

TABLE 401A

ANALYSIS OF WHITE MALE MORTALITY BY BROAD OCCUPATIONAL GROUPS

Occupational Group	Mortality Ratios*		Percentage Distribution of Males	
	Ages 25-64	Ages 65-74	Ages 25-64	Ages 65-74
Worked in 1950 or Later				
Professional, Technical, and Kindred Workers	0.80	1.04†	11.1%	6.2%
Managers and Officials	0.91	0.92	12.3	12.0
Clerical and Sales Workers	1.02	1.02	13.2	13.0
Craftsmen, Foremen, and Kindred Workers	0.97	0.97	22.3	20.7
Operatives and Kindred Workers	1.07	1.08	19.7	14.7
Service Workers	1.37	0.97†	4.9	9.6
Laborers, except Farm and Mine	1.19	1.13	5.4	6.9
Agricultural Workers	0.76	0.90	7.1	13.3
Occupation Not Reported	1.25	1.19	4.0	3.5
Total	1.00	1.00	100	100
Did Not Work in 1950 or Later	2.04	1.57		

* Relative to mortality of all men.

† Does not meet reliability requirements for sample.

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